AMENDMENT TO THE CLAIMS:

Please amend the claims as set forth below.

Please cancel claims 1-23 without prejudice or disclaimer. Applicants reserve the right to file one or more continuation or divisional applications directed to the canceled subject matter.

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims:

Claims 1-23 (canceled)

Claim 24. (Newly presented) A chemical detection system for detecting the presence of at least one chemical consisting essentially of at least one freely moving organism trained to display a recordable response behavior to at least one chemical, at least one detection chamber housing said organism, a sensor means for detecting a response by a trained organism, an air system for drawing an air sample for chemical detection into the chamber and over a freely moving trained organism, and a data analysis system operatively connected to said sensor means.

Claim 25. (Newly presented) The system of claim 24 wherein said organism is an invertebrate.

Claim 26. (Newly presented) The system of claim 25 wherein said invertebrate is an insect.

Claim 27. (Newly presented) The system of claim 24 wherein said sensor is an electronic sensor.

Claim 28. (Newly presented) The system of claim 24 wherein said system contains multiple detection chambers for determining per cent response to a single chemical or for determining the presence of multiple chemicals.

Claim 29. A method for detecting the presence of at least one chemical consisting essentially of:

(a) placing at least one organism trained to detect at least one chemical into at least one chamber wherein said one chamber

includes a compartment for said organism, a sample compartment, a divider with an opening wherein said divider contains a sensor and a data analysis system for reporting said response wherein said analysis system is operatively connected to said sensor and said divider is located between said organism compartment and said sample compartment,

(b) introducing a sample of air into said sample compartment and drawing it through said opening in the divider into the organism compartment, and

(c) recording a response behavior of said at least one organism to determine the presence of said chemical.

Claim 30. (Newly presented) The method of claim 29 wherein said trained organism is an invertebrate.

Claim 31. (Newly presented) The method of claim 30 wherein said invertebrate is an insect.

Claim 32. A method for training organisms to detect at least one chemical consisting essentially of:

(a) presenting a freely moving organism in the immediate presence of a biological resource,

(b) drawing air from around a target chemical over said organism after it displays a response behavior to said resource,

(c) removing said organism from said biological resource after it displays a response behavior to said resource, and

(d) repeating steps (a)-(c) at least about two times in the immediate presence of the biological resource to obtain a trained organism which displays behavior to a target chemical without the presence of a biological resource.

Claim 33. (Newly presented) The method of claim 32 wherein in

said biological resource is selected from the group consisting of food, host, mate, and prey.

Claim 34. (Newly presented) A chemical detection system for detecting the presence of at least one chemical comprising:

(a) a means for introducing a sample of air from an area suspected of containing a chemical into at least one detector chamber,

(b) at least one detector chamber containing an organism trained to detect a chemical wherein said chamber is operatively connected to said means for introducing a sample of air,

(c) a power source operatively connected to said means for introducing a sample of air,

(d) a sensor means for detecting a response by an organism trained to detect said chemical in a sample of air wherein said organism is in said detector chamber, and

(e) a data analysis system operatively connected to said sensor.

Claim 35. (Newly presented) The system of claim 34 wherein said means for introducing a sample of air into at least one detector chamber includes an air pump, a flow control valve, and a meter.

Claim 36. (Newly presented) The system of claim 34 wherein said sensor means for detecting a response is selected from the group consisting of an infrared sensor, a visible light sensor, and a laser sensor.

Claim 37. (Newly presented) A method for detecting the presence of at least one chemical comprising:

(a) placing at least one organism trained to detect a chemical into a chamber comprising a compartment for said

organism, a sample compartment, a divider containing a sensor and a data analysis system for reporting a response wherein said analysis system is operatively connected to said sensor and said divider has an opening wherein said divider is located between said organism compartment and said sample compartment,

((b) introducing a sample of air into said sample compartment and drawing it through said opening in the divider into the organism compartment, and

(c) recording a response behavior of said at least one organism to determine the presence of said chemical.